

## CLAIMS

1           1. A logically partitioned data processing system,  
2 comprising:  
3           a plurality of logical partitions;  
4           a plurality of operating systems, each assigned to  
5 one of said plurality of logical partitions;  
6           a plurality of memory locations, each location  
7 assigned to one of said plurality of logical partitions;  
8           a data transmission bus;  
9           at least one terminal bridge connected to said data  
10 transmission bus;

11           a plurality of input/output adapters, each  
12 associated with a different one of said plurality of  
13 logical partitions, said input/output adapters being  
14 connected to said terminal bridge; and  
15           means for preventing transmission of data between a  
16 given one of said input/output adapters which is  
17 associated with a first one of the plurality of logical  
18 partitions, and memory locations unassigned to said first  
19 one of said plurality of logical partitions.

1           2. The logically partitioned data processing system  
2 of Claim 1 wherein said data transmission bus is a PCI  
3 bus, and further comprising:  
4           a PCI host bridge connected to said PCI bus; and  
5           an input/output bus connected to said PCI host  
6 bridge.

1           3. The logically partitioned data processing system  
2 of Claim 1 wherein said terminal bridge has a plurality  
3 of sets of range registers, each associated with a  
4 respective one of said input/output adapters.

1           4. The logically partitioned data processing system  
2 of Claim 3 further comprising an arbiter which selects  
3 one of said input/output adapters to use said data  
4 transmission bus, wherein said transmission preventing  
5 means assigns one of said sets of range registers based  
6 on a grant signal from said arbiter.

1           5. The logically partitioned data processing system  
2 of Claim 3 wherein said sets of range registers contain  
3 direct memory access addresses which limit operations  
4 that may be placed onto said data transmission bus by  
5 said input/output adapters.

1           6. The logically partitioned data processing system  
2 of Claim 3 wherein said sets of range registers are  
3 programmable.

1           7. A method of preventing an operating system image  
2 within a logically partitioned data processing system  
3 from fetching or corrupting data from a memory location  
4 allocated to another operating system image within the  
5 data processing system, the method comprising the steps  
6 of:

7           receiving a request from the operating system image  
8 to access a given one of a plurality of input/output  
9 adapters each associated with a different one of a  
10 plurality of logical partitions of the data processing  
11 system, wherein the input/output adapters are connected  
12 to a single terminal bridge; and

13           accessing the given input/output adapter using  
14 memory mapped to the operating system image.

1           8. The method of Claim 7 wherein said accessing step  
2 includes the steps of:

3           transmitting the request to a PCI host bridge using  
4 an input/output bus; and

5           conveying the request from the PCI host bridge to  
6 the terminal bridge using a PCI bus.

1           9. The method of Claim 7 wherein said accessing step  
2 utilizes one of a plurality of sets of range registers of  
3 the terminal bridge, each associated with a respective  
4 one of the input/output adapters.

1           10. The method of Claim 9 wherein said accessing  
2 step further utilizes an arbiter which selects one of the  
3 input/output adapters, to assign one of the sets of range  
4 registers based on a grant signal from the arbiter.

1           11. The method of Claim 9 further comprising the  
2 step of associating each of the sets of range registers

3 with direct memory access addresses which limit access by  
4 the input/output adapters.

1 12. The method of Claim 9 further comprising the  
2 step of programmably loading the sets of range registers.

1234567891011121314151617181920212223242526272829303132333435363738394041424344454647484950515253545556575859606162636465666768697071727374757677787980818283848586878889909192939495969798991001011021031041051061071081091101111121131141151161171181191201211221231241251261271281291301311321331341351361371381391401411421431441451461471481491501511521531541551561571581591601611621631641651661671681691701711721731741751761771781791801811821831841851861871881891901911921931941951961971981992002012022032042052062072082092102112122132142152162172182192202212222232242252262272282292302312322332342352362372382392402412422432442452462472482492502512522532542552562572582592602612622632642652662672682692702712722732742752762772782792802812822832842852862872882892902912922932942952962972982993003013023033043053063073083093103113123133143153163173183193203213223233243253263273283293303313323333343353363373383393403413423433443453463473483493503513523533543553563573583593603613623633643653663673683693703713723733743753763773783793803813823833843853863873883893903913923933943953963973983994004014024034044054064074084094104114124134144154164174184194204214224234244254264274284294304314324334344354364374384394404414424434444454464474484494504514524534544554564574584594604614624634644654664674684694704714724734744754764774784794804814824834844854864874884894904914924934944954964974984995005015025035045055065075085095105115125135145155165175185195205215225235245255265275285295305315325335345355365375385395405415425435445455465475485495505515525535545555565575585595605615625635645655665675685695705715725735745755765775785795805815825835845855865875885895905915925935945955965975985996006016026036046056066076086096106116126136146156166176186196206216226236246256266276286296306316326336346356366376386396406416426436446456466476486496506516526536546556566576586596606616626636646656666676686696706716726736746756766776786796806816826836846856866876886896906916926936946956966976986997007017027037047057067077087097107117127137147157167177187197207217227237247257267277287297307317327337347357367377387397407417427437447457467477487497507517527537547557567577587597607617627637647657667677687697707717727737747757767777787797807817827837847857867877887897907917927937947957967977987998008018028038048058068078088098108118128138148158168178188198208218228238248258268278288298308318328338348358368378388398408418428438448458468478488498508518528538548558568578588598608618628638648658668678688698708718728738748758768778788798808818828838848858868878888898908918928938948958968978988999009019029039049059069079089099109119129139149159169179189199209219229239249259269279289299309319329339349359369379389399409419429439449459469479489499509519529539549559569579589599609619629639649659669679689699709719729739749759769779789799809819829839849859869879889899909919929939949959969979989991000100110021003100410051006100710081009101010111012101310141015101610171018101910201021102210231024102510261027102810291030103110321033103410351036103710381039104010411042104310441045104610471048104910501051105210531054105510561057105810591060106110621063106410651066106710681069107010711072107310741075107610771078107910801081108210831084108510861087108810891090109110921093109410951096109710981099110011011102110311041105110611071108110911101111111211131114111511161117111811191120112111221123112411251126112711281129113011311132113311341135113611371138113911401141114211431144114511461147114811491150115111521153115411551156115711581159116011611162116311641165116611671168116911701171117211731174117511761177117811791180118111821183118411851186118711881189119011911192119311941195119611971198119912001201120212031204120512061207120812091210121112121213121412151216121712181219122012211222122312241225122612271228122912301231123212331234123512361237123812391240124112421243124412451246124712481249125012511252125312541255125612571258125912601261126212631264126512661267126812691270127112721273127412751276127712781279128012811282128312841285128612871288128912901291129212931294129512961297129812991300130113021303130413051306130713081309131013111312131313141315131613171318131913201321132213231324132513261327132813291330133113321333133413351336133713381339134013411342134313441345134613471348134913501351135213531354135513561357135813591360136113621363136413651366136713681369137013711372137313741375137613771378137913801381138213831384138513861387138813891390139113921393139413951396139713981399140014011402140314041405140614071408140914101411141214131414141514161417141814191420142114221423142414251426142714281429143014311432143314341435143614371438143914401441144214431444144514461447144814491450145114521453145414551456145714581459146014611462146314641465146614671468146914701471147214731474147514761477147814791480148114821483148414851486148714881489149014911492149314941495149614971498149915001501150215031504150515061507150815091510151115121513151415151516151715181519152015211522152315241525152615271528152915301531153215331534153515361537153815391540154115421543154415451546154715481549155015511552155315541555155615571558155915601561156215631564156515661567156815691570157115721573157415751576157715781579158015811582158315841585158615871588158915901591159215931594159515961597159815991600160116021603160416051606160716081609161016111612161316141615161616171618161916201621162216231624162516261627162816291630163116321633163416351636163716381639164016411642164316441645164616471648164916501651165216531654165516561657165816591660166116621663166416651666166716681669167016711672167316741675167616771678167916801681168216831684168516861687168816891690169116921693169416951696169716981699170017011702170317041705170617071708170917101711171217131714171517161717171817191720172117221723172417251726172717281729173017311732173317341735173617371738173917401741174217431744174517461747174817491750175117521753175417551756175717581759176017611762176317641765176617671768176917701771177217731774177517761777177817791780178117821783178417851786178717881789179017911792179317941795179617971798179918001801180218031804180518061807180818091810181118121813181418151816181718181819182018211822182318241825182618271828182918301831183218331834183518361837183818391840184118421843184418451846184718481849185018511852185318541855185618571858185918601861186218631864186518661867186818691870187118721873187418751876187718781879188018811882188318841885188618871888188918901891189218931894189518961897189818991900190119021903190419051906190719081909191019111912191319141915191619171918191919201921192219231924192519261927192819291930193119321933193419351936193719381939194019411942194319441945194619471948194919501951195219531954195519561957195819591960196119621963196419651966196719681969197019711972197319741975197619771978197919801981198219831984198519861987198819891990199119921993199419951996199719981999200020012002200320042005200620072008200920102011201220132014201520162017201820192020202120222023202420252026202720282029203020312032203320342035203620372038203920402041204220432044204520462047204820492050205120522053205420552056205720582059206020612062206320642065206620672068206920702071207220732074207520762077207820792080208120822083208420852086208720882089209020912092209320942095209620972098209921002101210221032104210521062107210821092110211121122113211421152116211721182119212021212122212321242125212621272128212921302131213221332134213521362137213821392140214121422143214421452146214721482149215021512152215321542155215621572158215921602161216221632164216521662167216821692170217121722173217421752176217721782179218021812182218321842185218621872188218921902191219221932194219521962197219821992200220122022203220422052206220722082209221022112212221322142215221622172218221922202221222222232224222522262227222822292230223122322233223422352236223722382239224022412242224322442245224622472248224922502251225222532254225522562257225822592260226122622263226422652266226722682269227022712272227322742275227622772278227922802281228222832284228522862287228822892290229122922293229422952296229722982299230023012302230323042305230623072308230923102311231223132314231523162317231823192320232123222323232423252326232723282329233023312332233323342335233623372338233923402341234223432344234523462347234823492350235123522353235423552356235723582359236023612362236323642365236623672368236923702371237223732374237523762377237823792380238123822383238423852386238723882389239023912392239323942395239623972398239924002401240224032404240524062407240824092410241124122413241424152416241724182419242024212422242324242425242624272428242924302431243224332434243524362437243824392440244124422443244424452446244724482449245024512452245324542455245624572458245924602461246224632464246524662467246824692470247124722473247424752476247724782479248024812482248324842485248624872488248924902491249224932494249524962497249824992500250125022503250425052506250725082509251025112512251325142515251625172518251925202521252225232524252525262527252825292530253125322533253425352536253725382539254025412542254325442545254625472548254925502551255225532554255525562557255825592560256125622563256425652566256725682569257025712572257325742575257625772578257925802581258225832584258525862587258825892590259125922593259425952596259725982599260026012602260326042605260626072608260926102611261226132614261526162617261826192620262126222623262426252626262726282629263026312632263326342635263626372638263926402641264226432644264526462647264826492650265126522653265426552656265726582659266026612662266326642665266626672668266926702671267226732674267526762677267826792680268126822683268426852686268726882689269026912692269326942695269626972698269927002701270227032704270527062707270827092710271127122713271427152716271727182719272027212722272327242725272627272728272927302731273227332734273527362737273827392740274127422743274427452746274727482749275027512752275327542755275627572758275927602761276227632764276527662767276827692770277127722773277427752776277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1           13. A computer program product for use in a data  
2     processing system for preventing an operating system  
3     image within a logically partitioned data processing  
4     system from fetching or corrupting data from a memory  
5     location allocated to another operating system image  
6     within the data processing system, the computer program  
7     product comprising:

8           a storage medium; and  
9           program instructions stored on said storage medium  
10    for receiving a request from the operating system image  
11    to access a given one of a plurality of input/output  
12    adapters each associated with a different one of a  
13    plurality of logical partitions of the data processing  
14    system, wherein the input/output adapters are connected  
15    to a single terminal bridge, and for accessing the given  
16    input/output adapter using memory mapped to the operating  
17    system image.

1           14. The computer program product of Claim 13 wherein  
2     the request comprises an input/output adapter identity, a  
3     memory address range to be mapped, and a direct memory  
4     access range, and said program instructions further  
5     determine that the identity of the input/output adapter,  
6     the memory address range, and the direct memory access  
7     range are allocated to the operating system image.

1           15. The computer program product of Claim 13 wherein  
2     said program instructions access the input/output adapter  
3     utilizing one of a plurality of sets of range registers  
4     of the terminal bridge, each associated with a respective  
5     one of the input/output adapters.

1           16. The computer program product of Claim 15 wherein  
2       said program instructions further load the sets of range  
3       registers.